UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/800,086	03/05/2001	Aki Korhonen	19703000610	3265

20350	7590	06/28/2004

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EXAMINER
LAO, SUE X

ART UNIT	PAPER NUMBER
2126	

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-26_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-26_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-26 are presented for examination.

2.   Claim 25 is objected to because of the following informalities: missing "." at the end of line 3. Appropriate correction is required.

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

    A person shall be entitled to a patent unless --

    (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Kathail et al (U S Pat. 5,802,365).

        As to claim 1, Kathail teaches in a computer system having an operating system (operating system 30) and one or more devices (104, 105), a method for testing a device, the method comprising:

        determining a device driver for the device (FindDriversForDevice, col. 29, line 39 – col. 30, line 10);

        determining a class (family) to which the device driver belongs (match family with devices, col. 19, lines 8-10); and

        performing a diagnostic test based on the class of the device driver (DeviceProbe, col. 41, lines 18-59).

        As to claim 2, Kathail teaches determining a device driver occurs while the operating system is active in that the system has been booted (col. 20, lines 4-10).

        As to claim 3, Kathail teaches coordinating access to the device prior to the step of performing a diagnostic test in that finding/locating the driver inherently occurs before probing the found driver data structure (col. 41, lines 18-59).

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 4-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al (U S Pat. 5,802,365).

As to claim 4, Kathail teaches a method for performing diagnostics (diagnostic operations) on a computer hardware device (104, 105) having a device driver (device driver) for interfacing with the computer hardware device. Kathail further teaches

Publishing (device driver presents to operating system 30) capabilities (functionality) of the device driver (driver description structure 80a, col. 10, line 56 – col. 11, line 42);

performing a diagnostic test on the computer hardware device, based on the capabilities of the device driver.

While Kathail does not explicitly teach receiving the capabilities of the device driver, it would have been an obvious step because the operating system including its device manager maintains (Registry 10) such device driver information use it to manage (such as match and probe) devices and drivers. Col. 10, line 56 – col. 11, line 42; col. 41, lines 18-59; col. 42, lines 20-64.

As to claim 5, Kathail teaches identifying capabilities of the device driver (driver description) by a diagnostic module (device manager) (col. 10, lines 14-28).

As to claim 6, note discussion of claim 3.

As to claims 7, 8, Kathail teaches testing the computer hardware device using the diagnostic module (DeviceProbe, col. 41, lines 18-59), determining the device driver is for interfacing with the computer hardware device (no error).

7.   Claims 10-13, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al (U S Pat. 5,802,365) as applied to claim 4, 17 in view of Capelli (U S Pat. 6,240,468).

As to claims 12, 13, Kathail teaches broadcasting capabilities (driver description exported to registry 10, col. 10, lines 14-27), but does not teach that the capabilities include that the device driver is capable of being passed through to access the computer hardware device, and when in diagnostic mode.

Capelli teaches switching a device driver between a standard and a non-standard modes of communication, wherein the device driver (module 202, which itself is a device driver, col. 4, lines 6-9) is capable of being passed through (set to inactive state, col. 3, lines 20-54). Therefore, it would have been obvious to include into the capabilities of Kathail that the device driver is capable of being passed through in order to access the hardware device. One of ordinary skill in the art would have been motivated to combine the teachings of Kathail and Capelli because this would have provided a transparent mechanism to support multiple operation modes without replacing/reinstalling the device drivers (Capelli, col. 1, lines 45-63; col. 5, lines 5-19). When the teachings are combined, it would have been obvious that device driver is capable of being passed when in diagnostic mode because diagnostic is one of the two operation modes (normal mode and diagnostic mode).

As to claims 10, 11, Kathail teaches broadcasting capabilities (driver description exported to registry 10, col. 10, lines 14-27), but does not teach that the capabilities include accessing the computer hardware device in parallel with a diagnostic module, if the device driver is notified by the diagnostic module when testing is complete, and if the device driver is off-line.

Capelli teaches a standard driver accesses a device in parallel with a specialized driver (perform initialization/termination functions by both drivers, col. 3, lines 46-67) and if the device driver is notified when testing is complete (termination function processing, col. 3, lines 46-67), and if the device driver is off-line (initialization, col. 3, lines 46-67) (it is noted that initialization is typically performed on off-line

hardware/software devices to bring them on-line). Therefore, it would have been obvious to allow the device driver (standard driver) accessing a device in parallel with a diagnostic module (specialized driver) in Kathail, and to include the parallel access into the capabilities broadcast. Note discussion of claim 12 for a motivation to combine.

As to claim 25, note discussion of claim 10.

8.   Claims 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al as applied to claim 1 in view of Fukuoka et al (U S Pat. 4,802,164).

As to claims 15, 16, teaches allocating an area of a device for testing (turn on the lock), performing a diagnostic test directly on the area allocated (test I/O), and releasing the area allocated when the test is concluded (turn off the lock). See col. 2, line 47 - col. 3, line 15; col. 5, line 55 – col. 6, line 18. Therefore, it would have been obvious to allocate an area, to perform a diagnostic test and to releasing the area in Kathail. One of ordinary skill in the art would have been motivated to apply the teaching of Fukuoka because this would have provided enhanced start control of the devices (col.,1, lines 33-36, 53-68) in the multiple operation environment (normal operation, testing) of Kathail.

9.   Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al (U S Pat. 5,802,365) in view of Perugini et al (U S Pat. 5,896,494).

As to claim 26, Kathail teaches a system for testing one or more devices (104, 105) attachable to a computer system, comprising:

a device access kernel (system software 30 including device manager 95), wherein said device access kernel is capable of identifying a device driver associated with a device (FindDriversForDevice, col. 29, line 39 – col. 30, line 10) and determining what class (family, col. 18, lines 25-26) said device driver belongs to (match family with devices, col. 19, lines 8-10).

While Kathail teaches testing devices of different classes, Kathail does not explicitly teach a plurality of diagnostic tests designed to respectively test said one or

more devices, wherein said device access kernel selects one of said plurality of diagnostic tests for testing said device based on said determined class.

Perugini teaches testing devices of different classes (different types of hardware components), including a plurality of diagnostic tests (diagnostic library 202, modules 234-268) designed to respectively test said one or more devices, wherein a device access kernel selects (configuration utility, fig. 2C) one of the plurality of diagnostic tests for testing a device based on the determined class (specific types of devices) (test profiler allows selection of modules, each targeting a specific types of hardware, col. 9, lines 32-35).

Therefore, it would have been obvious to include a plurality of diagnostic tests designed to respectively test said one or more devices into Kathail, and that the device access kernel selects one of the plurality of diagnostic tests for testing that device based on said determined class. One of ordinary skill in the art would have been motivated to combine the teachings of Kathail and Perugini because this would have provided an intuitive graphical test development environment which simplifies test definition process (col. 2, lines 3-39).

10.   Claims 17-19, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al in view of IBM (TDB, "Diagnostic Kernel Externsion").

As to claim 17, note discussion of claim 1 for operating system, at least one hardware device, device driver, class. Kathail further teaches kernel module (device manager 95) for communicating with the device driver and the operating system, diagnostic module (device manager 95) for coordinating with the kernel module and/or the device driver in order to perform diagnostics on the hardware device. See col. 9, line 21 – col. 10,line 27. it is noted that the alternative limitation 'and/or' is interpreted as requiring only one.

Kathail does not teach that the driver and the modules are packaged into a diagnostic hardware access layer interface for performing diagnostics.

IBM teaches packaging diagnostics software into a diagnostic hardware access layer interface (diagnostic kernel extension). See entire text. Therefore, it would have

been obvious to package the driver and the modules of Kathail into a diagnostic hardware access layer interface. One of ordinary skill in the art would have been motivated to combine the teachings of Kathail and IBM because this would have reduced driver cycle time and path length (IBM, page 2).

As to claim 18, Kathail teaches device driver is capable of publishing the class to which it belongs (export driver description to registry 10, col. 10, lines 14-27).

As to claim 19, Kathail teaches the kernel module identifies the class of the device driver (Registry 10).

As to claim 21, Kathail teaches the kernel module is capable of determining whether diagnostics are performable on the hardware device (DeviceProbe, col. 41, lines 18-59).

As to claim 22, Kathail teaches the class of the device driver is dependent on the hardware device (family, col. 19, lines 8-10).

11.   Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al in view of Capelli and Fukuoka et al.

As to claim 9, note discussion of claims 10, 11 for broadcasting capabilities including parallel access capability. Note discussion of claim 15 for allocating an area of the computer hardware device for testing.

12.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al in view of Edwards et al (U S Pat. 6,44,735) and IBM (TDB, "Diagnostic Kernel Extension").

As to claim 14, Kathail teaches broadcasting capabilities (driver description exported to registry 10, col. 10, lines 14-27), but does not teach that the capabilities include that only diagnostics embedded in the device driver may perform diagnostics on the computer hardware device. Edwards teaches only diagnostics embedded in the device driver may perform diagnostics on the computer hardware device (internal diagnostic processes, col. 8, lines 36-48). Therefore, it would have been obvious to allow only diagnostics embedded in the device driver to perform diagnostics on the

computer hardware device in Kathail. One of ordinary skill in the art would have been motivated to combine the teachings of Kathail and Edwards because IBM teaches that placing test code in the driver and in the kernel extensions are obvious alternatives to each other (IBM, pages1-2) .

13.   Claims 20, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al in view of IBM as applied to claim 17 and further in view of Capelli.

As to claim 20, note discussion of claim 10.

As to claims 23, 24, Capelli teaches a driver/device is identified by its mode (standard mode, specialized mode). Therefore, it would have been obvious to classify/identify a driver depending on its mode in Kathail. When the teachings of Kathail an Capelli are combined, it would have been obvious to classify/identify a driver by both the mode of the device/driver and the hardware device because they each describe an important aspect of the device/driver operations.

14.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

15.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Lao whose telephone number is (703) 305-9657. A voice mail service is also available at this number. The examiner's supervisor, SPE Meng-Ai An, can be reached on (703) 305 9678. The examiner can normally be reached on Monday - Friday, from 9AM to 5PM. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

Sue Lao
June 16, 2004